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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,307	03/26/2004	Joseph Paul Lauer	BP 3199	7994
34399	7590	05/01/2007		
GARLICK HARRISON & MARKISON			EXAMINER	
P.O. BOX 160727			JOSEPH, JAISON	
AUSTIN, TX 78716-0727				
			ART UNIT	PAPER NUMBER
			2611	
			MAIL DATE	DELIVERY MODE
			05/01/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/810,307

Applicant(s)

LAUER ET AL.

Examiner

Jaison Joseph

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 and 6-10 is/are allowed.
- 6) ☒ Claim(s) 11 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 5, 12, 13 and 17-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

Claims 5, 17 and 18 objected to because of the following informalities: Claim 5 recite an equation, which includes the plurality of variables. The said variables are not defined in the claim. All the variables recited in a claim must be defined within the claim. Appropriate correction is required.

Similar scenarios exist in claims 17 and 18. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 and 14 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda (USPAP 2004/0136467) in view of Miller et al. (USPAP 2004/0078408).

Regarding claim 11, Noda teaches a machine readable medium having stored thereon executable instructions and data which, when executed by at least one

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processing device (see paragraph 0132), cause the at least one processing device to compute a branch metric for a Viterbi decoder, comprising implementing a multiplication operation of a first term and a second term in branch metric operation (see paragraph 0033 and 0090) Noda does not expressly teach adding a log of a first term to a log of the second term to form a first sum and determining the antilog of the first sum do the multiplication. However in analogous art, Miller et al teach adding a log of a first term to a log of the second term to form a first sum and determining the antilog of the first sum do the multiplication (see paragraphs 58 – 63). Therefore it would be obvious to an ordinary skilled in the art at the time the invention was made to incorporate Miller et al's teachings of multiplication in Noda's Branch metric computation. The motivation or suggestion to do so is to have a simpler circuit.

Regarding claim 14, Noda teaches an apparatus for decoding a signal the apparatus comprising: means for receiving a sampled signal; means for demapping the received sampled signal into branch metric comprising means for performing multiplication operations and means for providing the branch metric a Viterbi decoder (see paragraph 0033 and 0090). Noda does not expressly disclose the multiplication operation is performed in a log domain. However Miller et al teach performing multiplication and division operations in log domain (see paragraphs 58 – 63). Therefore it would be obvious to an ordinary skilled in the art at the time the invention was made to incorporate the teachings of multiplication in Noda's Branch metric computation. The motivation or suggestion to do so is to have a simpler circuit.

Regarding claim 15, which inherits the limitations of claim 14, Miller et al. further teach means for calculating a log function (see paragraphs 58 – 63).

Regarding claim 16, which inherits the limitations of claim 14, Miller et al further teach means for calculating an antilog function (see paragraphs 58 – 63).

### ***Allowable Subject Matter***

Claims 1 – 4 and 6 –10 are allowable over prior art of record.

Claim 5 would be allowable if rewritten to overcome above-mentioned claim objections.

Claims 12, 13, 17 – 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to overcome above mentioned claim objections.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaison Joseph whose telephone number is (571) 272-6041. The examiner can normally be reached on M-F 9:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jaison Joseph  
04/26/2007



CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER